REMARKS:

The Examiner rejected claims 1-25 under 35 U.S.C. §103(a) as being unpatentable over Hadjichristos et al. (U.S. Patent No. 6,785,521) in view of Kenji (U.S. Patent No. 4,509,101). These rejections are respectfully disagreed with and are traversed below.

Claim 1 recites:

> A power amplifier module operable over a range of output power levels, comprising
>
> (i) an output transistor having an input coupled to an input node of the power amplifier module and an output coupled to an output node of the power amplifier module,
>
> (ii) the power amplifier module further comprising circuitry for automatically compensating a load line of the output transistor for impedance variations appearing at the output node,
>
> (iii) the circuitry comprising detection circuitry for generating a first detection signal having a value that is indicative of the current flowing through the output transistor and a second detection signal having a value that is indicative of the voltage appearing at the output of the output transistor,
>
> (iv) and further comprising compensation circuitry for controlling the generation of a plurality of power amplifier bias current and bias voltage signals to have values that are a function of the values of the first and second detection signals, and the current output power level of the power amplifier module.

Note that the reference numbers included in claim 1 above are merely utilized for discussion purposes and are not components of claim 1. Said reference numbers should be viewed as a non-limiting example for arranging claim 1, presented only to facilitate discussion of the rejection of claim 1.

In rejecting claim 1, the Examiner states that Hadjichristos et al. fail to disclose (iii) and (iv). The Examiner then asserts that Kenji discloses the subject matter of (iii) and (iv) at col. 3, lines 55-67, col. 4, lines 1-32 and col. 6, lines 30-41.

Kenji discloses:

> A protection circuit for a switching power amplifier comprises a first detection circuit which detects a current flowing through an output stage switching circuit, a second detection circuit which detects an output voltage of the output stage switching circuit, and an amplitude limitation circuit which limits the amplitude of an input signal to the output stage switching circuit in accordance with both the first and second detection.

See Abstract of Kenji.

At col. 5, line63-col. 6, line 6, Kenji states:

> As is apparent from FIG. 3, in this invention the current limitation is performed based on the output current magnitude and the output voltage magnitude, and accordingly it is possible to derive a possible maximum output power from the output stage switching circuit, and to surely limit the drain current at the time when the load resistance extremely decreases, for example, due to short-circuiting between the output terminal and the ground. Furthermore, it is unnecessary to use high speed switching transistors in the switching circuit, so that the circuit can be manufactured at relatively low cost.

At col. 3, lines 55-col. 4, line 57, Kenji describes how the pulse-width modulation amplifier of FIG. 2 functions in the manner described above.

Kenji mentions bias voltage at a few points, namely: when describing prior art bias voltage sources 1a and 1b shown in FIG. 1 (col. 1, lines 22-29); when describing bias voltage sources 1a and 1b in Kenji's pulse-width modulation amplifier shown in FIG. 2 (col. 3, lines 1-8); and when observing that the transistors 21a and 21b in the current detection circuit 24 of FIG. 2 are voltage biased by the Zener diodes 22a and 22b (col. 4, lines 12-18). At no other point does Kenji discuss voltage bias. Kenji does not disclose or suggest controlling the generation of a bias voltage nor controlling the generation of a bias voltage to have a value that is a function of the values of first and second detection signals, and the current output power level of the power amplifier module.

At no point does Kenji disclose or suggest operations relating to bias current. Furthermore, Kenji does not disclose or suggest controlling the generation of a bias current nor controlling the generation of a bias current to have a value that is a function of the values of first and second detection signals, and the current output power level of the power amplifier module.

Kenji does not disclose or suggest "controlling the generation of a plurality of power amplifier bias current and bias voltage signals" let alone controlling such bias signals "to have values that are a function of the values of the first and second detection signals, and the current output power level of the power amplifier module."

Contrary to the Examiner's assertion, Kenji does not disclose or suggest "compensation circuitry for controlling the generation of a plurality of power amplifier bias current and bias voltage signals to have values that are a function of the values of the first and second detection signals, and the current output power level of the power amplifier module," as recited in claim 1 of the instant application, for example. Furthermore, Hadjichristos et al. do not disclose these elements nor does the Examiner argue otherwise.

As noted above, Kenji's amplifier is a switching power amplifier that uses a pulse-width modulation technique (see col. 2, lines 66-68). In contrast, exemplary embodiments of the instant application relate to a radio frequency power amplifier that can operate on analog signals.

Kenji relates to an ***audio frequency*** amplifier driving a loudspeaker load (9) (see FIG. 1). The audible range for humans generally extends from 20 Hz to 20 kHz. In contrast to Kenji, exemplary embodiments of the instant application are related to a ***radio frequency*** power amplifier that can be used, for example, for signals having a frequency up to 2 GHz, or higher.

One problem which the instant application is directed to concerns matching an antenna to a power amplifier (e.g., the VSWR problem). The VSWR problem does not exist at audio frequencies. Thus, Kenji's disclosure cannot and does not address the VSWR problem, whereas exemplary embodiments of the instant application do address the VSWR problem.

The features recited in claim 1 are not disclosed or suggested in the cited art. Hadjichristos et al. in view of Kenji certainly does not render claim 1 obvious. Therefore, claim 1 is patentable and should be allowed.

Though dependent claims 2-9 contain their own allowable subject matter, these claims should at least be allowable due to their dependence from allowable claim 1.

Independent claims 9, 17, 20 and 21 claim a similar feature as claim 1 noted above, including "A method to operate a power amplifier module over a range of output power levels, comprising: ...automatically compensating a load line of the output transistor for impedance variations appearing at an output node of the power amplifier module by controlling the generation of a plurality of power amplifier bias current and bias voltage signals to have values that are a function of the values of the first and second detection signals, and the current output power level of the power amplifier module" (claim 9); "A radio frequency (RF) power amplifier module operable over a range of output power levels... further comprising compensation circuitry for

controlling the generation of a plurality of power amplifier bias current and bias voltage signals to have values that are a function of the values of the first and second detection signals, respectively, and the value of a signal that is indicative of a current output power level of the RF power amplifier module" (claim 17); "A radio frequency (RF) power amplifier contained within a package... further comprising load line compensation circuitry responsive to the detection signals and to the power control signal for maintaining a desired output linearity of the amplified RF signal" (claim 20); and "A mobile radiocommunication terminal comprising... a radio frequency (RF) power amplifier module... comprising circuitry for automatic compensation of the output transistor for impedance variations appearing at the output node due at least in part to variations in an environment of the antenna, the automatic compensation circuitry comprising... bias control circuitry for controlling the generation of a plurality of power amplifier bias current and bias voltage signals to have values that are a function of the values of the first and second detection signals, respectively, and also the value of a signal that is indicative of a current output power level of the RF power amplifier module" (claim 21).

For the same reasons stated above with respect to claim 1, independent claims 9, 17, 20 and 21 are not rendered obvious by Hadjichristos et al. in view of Kenji. Therefore, claims 9, 17, 20 and 21 are patentable and should be allowed.

Though dependent claims 10-16, 18-19 and 22-25 contain their own allowable subject matter, these claims should at least be allowable due to their dependence from allowable claims 9, 17 and 21.

With regards to claim 17, it is further noted that claim 17 recites in part: "A radio frequency (RF) power amplifier module... further comprising circuitry for automatically compensating the output transistor for impedance variations appearing at the output node **due at least in part to a change in an RF propagation environment of the antenna**."

The Examiner failed to identify a specific portion or portions of Hadjichristos et al. and/or Kenji that alleged to disclose the above-identified subject matter recited in claim 17. The rejection of

claim 17 is further traversed for this lack of support. Furthermore, neither Hadjichristos et al. nor Kenji, considered separately or in combination, is seen to disclose or suggest this subject matter. Claim 17 is patentable over the cited prior art and should be allowed.

Dependent claims 18-19, due to their dependency from allowable claim 17, are further patentable for this same reason and should be allowed.

The Examiner is respectfully requested to reconsider and remove the rejections of claims 1-25 under 35 U.S.C. §103(a) and to allow all of the pending claims as now presented for examination. For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Should any unresolved issue remain, the Examiner is invited to call Applicants' agent at the telephone number indicated below.

Respectfully submitted:

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CERTIFICATE OF MAILING

I hereby certify that this Response to the Examiner's Office Action mailed on May 21, 2007 is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Ann Okrentowich 9-21-07

Name of Person Making Deposit Date